

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Lauren Schleh on 3/18/10.

The application has been amended as follows:

4. A personal identification method for identifying a user by projecting an objective beam and a reference beam subjected to spatial light modulation in accordance with information to be recorded onto a holographic recording portion of an optical information recording medium having the holographic recording portion to record the information by interference fringes, and projecting a reproduction reference beam onto the interference fringes to reproduce the object beam, the method comprising:

subjecting the reference beam to the spatial light modulation by record cryptographic identification information based on biometric information of the user when recording the information,

subjecting the reproduction reference beam to the spatial light modulation by validation cryptographic identification information based on biometric information directly obtained from the user when reproducing the information,

imaging the biometric information by a predetermined encoding scheme, forming the record cryptographic identification information and the validation cryptographic identification information, and this image is used as a modulation pattern of the reference beam and the reproduction reference beam, wherein

the encoding scheme comprises the steps of:

dividing an original image displaying the biometric information into a plurality of pixel blocks, said pixel blocks being composed of a plurality of and the same number of pixels, and detecting and counting the number of ON pixels or OFF pixels in each pixel block; and

converting the pixels of each pixel block into a corresponding one of a plurality of predetermined conversion pixel patterns based on the counted number of ON pixels or OFF pixels in order to provide a bitmap image indicating the record cryptographic identification information and the validation cryptographic identification information; and

wherein the each pixel block is composed of an even number equal to or more than six of pixels, and the each conversion pixel pattern has the same number of ON pixels and OFF pixels.

12. A personal identification system comprising:

an optical information recording medium having a holographic recording portion in which a hologram is formed, the hologram being formed by interference fringes when a reference beam subjected to spatial light modulation by record cryptographic identification information based on biometric information of a user and an object beam

subjected to spatial light modulation in accordance with information to be recorded are projected;

a biological information sensor that can directly obtain the biometric information from the user;

an information processing device for using the biometric information obtained by the biological information sensor as validation cryptographic identification information;

a reproduction optical system for projecting a reproduction reference beam similar to the reference beam at the time of recording to the holographic recording portion in order to reproduce the recorded information by generated diffracted light;

a spatial light modulator for modulating the reproduction reference beam by the validation cryptographic identification information; and

a calculation device for verifying an identity of the user on the basis of the information reproduced by the reproduction optical system and outputting a signal allowing or refusing the user by a validation result, wherein

the record cryptographic information and the validation cryptographic information are modulation patterns of the biometric information by imaging the biometric information by a predetermined encoding scheme,

the record cryptographic information and the validation cryptographic information are bitmap images formed by dividing original images displaying the biometric information into a plurality of pixel blocks composed of a plurality of and the same number of pixels, detecting and counting the number of ON pixels or OFF pixels in each pixel block, and converting the pixels of each pixel block into a corresponding one of a

plurality of predetermined conversion pixel patterns based on the counted number of ON pixels or OFF pixels, and

~~the~~ each pixel block is composed of an even number equal to or more than six of pixels, and ~~the~~ each conversion pixel pattern has the same number of ON pixels and OFF pixels.

~~46~~ 21. The personal identification method according to claim 4, wherein the number of predetermined conversion pixel patterns is equal to one more than the number of pixels contained in each pixel block, each of the conversion pixel patterns being different from the other conversion pixel patterns.

~~47~~ 22. The personal identification method according to claim 16, wherein the bitmap image is created by counting the number of ON pixels in each pixel block, determining which one of the conversion pixel patterns corresponds to the counted number of ON pixels, and substituting the pixel block of the original image with the determined conversion pixel pattern.

~~48~~ 23. The personal identification method according to claim 12, wherein the number of predetermined conversion pixel patterns is equal to one more than the number of pixels contained in each pixel block, each of the conversion pixel patterns being different from the other conversion pixel patterns.

49 24. The personal identification method according to claim 18, wherein the bitmap image is created by counting the number of ON pixels in each pixel block, determining which one of the conversion pixel patterns corresponds to the counted number of ON pixels, and substituting the pixel block of the original image with the determined conversion pixel pattern.

The following is an examiner's statement of reasons for allowance:

The prior art discloses a method and system for identifying a user by projecting an objective beam and a reference beam subjected to spatial light modulation in accordance with encoded biometric information obtained from a user.

However, the prior art fails to teach the method of claim 4, comprising: "dividing an original image displaying the biometric information into a plurality of pixel blocks, said pixel blocks being composed of a plurality of and the same number of pixels, and detecting and counting the number of ON pixels or OFF pixels in each pixel block; and

converting the pixels of each pixel block into a corresponding one of a plurality of predetermined conversion pixel patterns based on the counted number of ON pixels or OFF pixels in order to provide a bitmap image indicating the record cryptographic identification information and the validation cryptographic identification information; and

wherein each pixel block is composed of an even number equal to or more than six of pixels, and each conversion pixel pattern has the same number of ON pixels and OFF pixels".

Furthermore, the prior art fails to teach the system of claim 12, comprising: "the record cryptographic information and the validation cryptographic information are bitmap images formed by dividing original images displaying the biometric information into a plurality of pixel blocks composed of a plurality of and the same number of pixels, detecting and counting the number of ON pixels or OFF pixels in each pixel block, and converting the pixels of each pixel block into a corresponding one of a plurality of predetermined conversion pixel patterns based on the counted number of ON pixels or OFF pixels, and

each pixel block is composed of an even number equal to or more than six of pixels, and each conversion pixel pattern has the same number of ON pixels and OFF pixels.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JEFFERY WILLIAMS whose telephone number is (571)272-7965. The examiner can normally be reached on 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Emmanuel Moise can be reached on (571) 272-3865. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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